Defense Information Systems Agency
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GIG Technologies

Rich Williams
Acting Principal Director, GIG Engineering
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Topics

- Vision
- Technology
- Convergence – Unified Communications
- Innovation Engineering

Today's technologically advanced student is the Warfighter of 2016 and will test the limits for tomorrow's defense infrastructure

Student of 2008	Warfighter of 2016	Services/ Infrastructure Requirements
Available Technologies • VoIP, Internet TV, On Demand Media • Virtual Worlds, Online Games • Web 2.0, Chat, Email, Interactive Web/Apps • Integrated GPS Hardware • High Speed Wireless • HDTV and Interactive TV • Mobile Computing • P2P Music and Videos	• Adaptive Planning • Predictive Battlespace Awareness • Data Fusion • Modeling and Simulation • Early Warning • Knowledge Management	• High Availability Networks • Standards and interoperability of systems • Community of Interest Network Integration • Infrastructure Consolidation
	• Dynamic Targeting • Time Sensitive Strike • Persistent ISR • Automated Threat Detection • Battle Damage Assessment • Multi-Dimensional Data	• Low Latency • Large Data Transfer Capabilities • Priority-based policies (QoS) • Redundancy and Failover
	• Data Sharing Environments • Distance Learning • Wargaming • Reduced Footprint • Power Projection	• Wireless and Mesh connectivity • Low Jitter networking SLAs • Interoperability of Systems
	• Force Protection • Virtual Medicine • Enhanced Stealth • CBRN/Biohazard Detection	• Edge connectivity • Standards and interoperability of systems • Sensor Networking

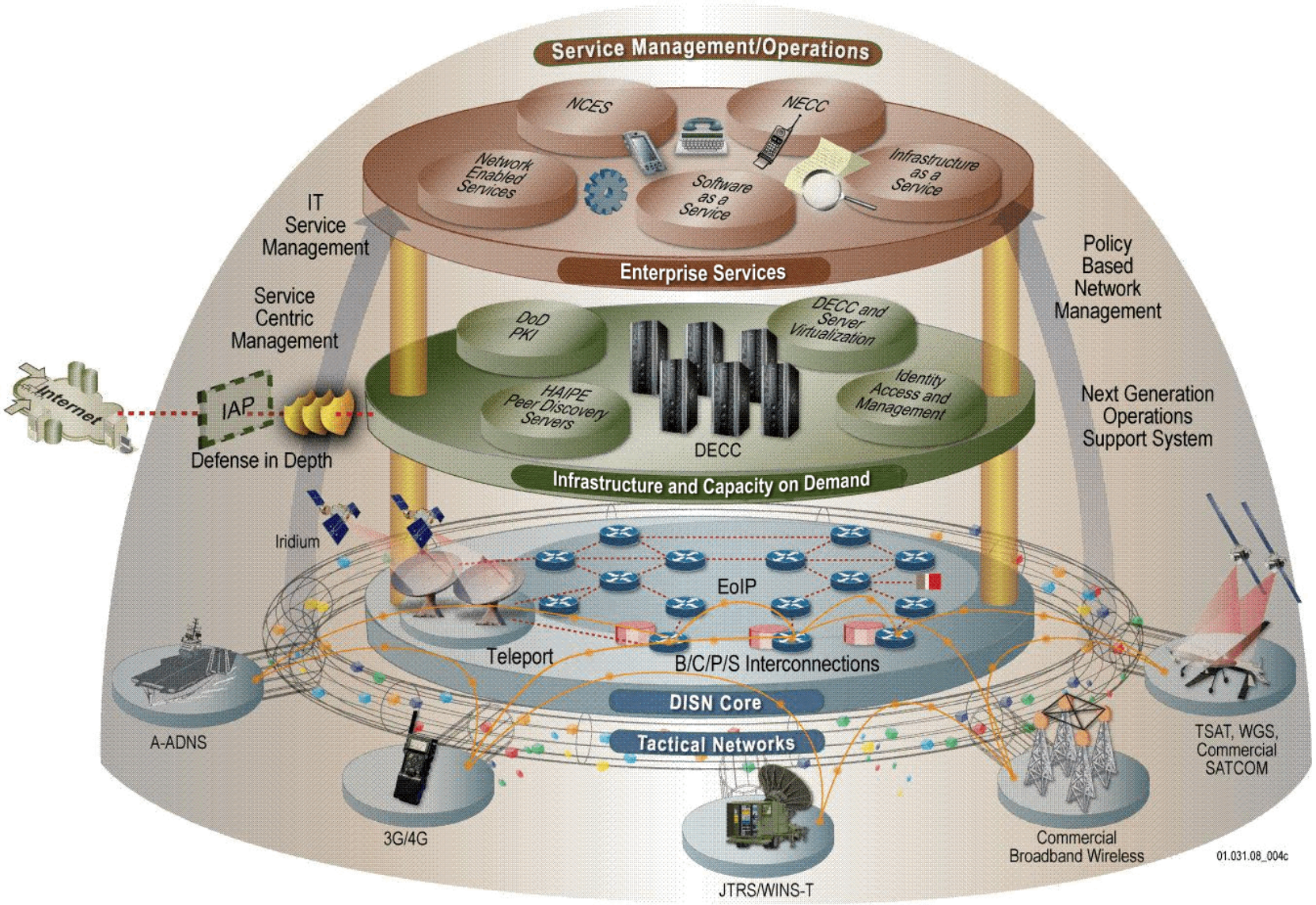
Examples of Technology Areas

- **Possible Bins for Technology Research**
  - **Reduce operations cost of the GIG Core segment**
    - **Automated management**
    - **“Always on”**
    - **Automated defense**
  - **Management of the GIG Intermediate/Edge segments**
    - **“Always on”**
      - **SOA based planning**
    - **Policy Based Enterprise Management (PBEM)**
    - **Core- Intermediate/ Edge integration**
      - **intelligent routing**
      - **Includes aerial elements**
  - **New services via Unified Communications**
    - **Extension of unified communications (UC) to wireless/mobile**
  - **Improved “Speed” of deployment**
    - **GIG FDCE**
    - **Innovation engineering via CRADA’s, Acquisition Challenge Program and JCTD’s**

Some “Other” Areas

- Advanced network encryption and routing
- Thin client/stateless client
- Broadband COTM
- Distributed C2
- Smart caching
- GIG as a sensor
- Cyber SA/defense
- Cross Domain Information Sharing
- Multi-Level Security solutions
- Enterprise Service Bus (ESB)

GIG 2.0


Service Management/Operations
NCES
NECC
Network Enabled Services
Software as a Service
Infrastructure as a Service
Enterprise Services
IT Service Management
Service Centric Management
Policy Based Network Management
DoD PKI
DECC and Server Virtualization
HAIPE Peer Discovery Servers
Identity Access and Management
DECC
Next Generation Operations Support System
Internet
IAP
Defense in Depth
Infrastructure and Capacity on Demand
Iridium
EoIP
Teleport
B/C/P/S Interconnections
DISN Core
Tactical Networks
A-ADNS
3G/4G
JTRS/WINS-T
Commercial Broadband Wireless
TSAT, WGS, Commercial SATCOM
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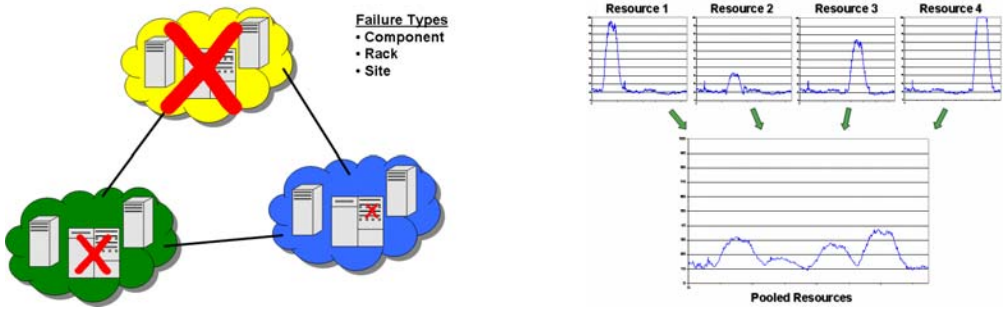
Cloud Computing Infrastructure

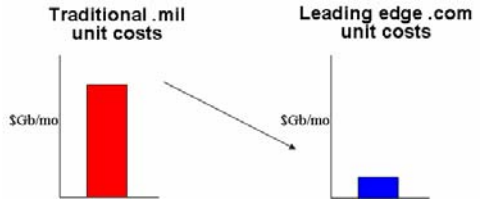
Dynamically Scalable Infrastructure with High Resiliency

Can pivot shared resources to focus on highest priority mission +
Infrastructure designed to accommodate regular component failure = "baked-in" resiliency



Disruptively Low Unit Costs (Processing & Storage)

Enables global aggregation of data + pre-formatting of data for optimum dissemination



- **DISA has multiple capacity on demand contracts to pay for computing capacity on a usage basis**
- **Piloting a service (based initially on our capacity on demand contract with HP) called RACE (Rapid Access Computing Environment)**
- **In the future expand these capabilities and leverage technology to provide advanced cloud computing services to provide fault tolerant computing that adds computing capacity automatically as demand on a particular service grows**

DISA Web 2.0 Leadership — OCTO Objectives

Community Publishing

GIGapedia:

https://gigapedia.sraprod.com/wiki/index.php/Main_Page

(Harnessing Collective Intelligence)

Relationship Building

DoD Social Networking Service (SNS):

Work in Progress

https://www.us.army.mil/suite/page/386542

(Harnessing Collective Intelligence)

DISA Web 2.0 Collaborative Community

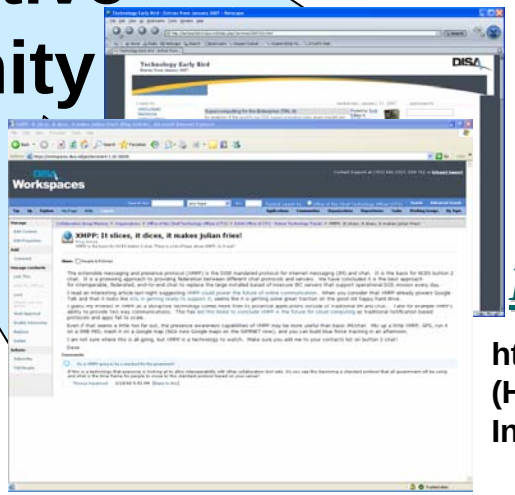
CTO Research Mashup:

http://pipes.yahoo.com/cto_research_mashup/start

(Rich User Experience)

Tech Early Bird:

Early implementation of some Web 2.0 capabilities



DISA CTO Blog:

https://ctoblog.disa.mil (Harnessing Collective Intelligence)

Information Integration

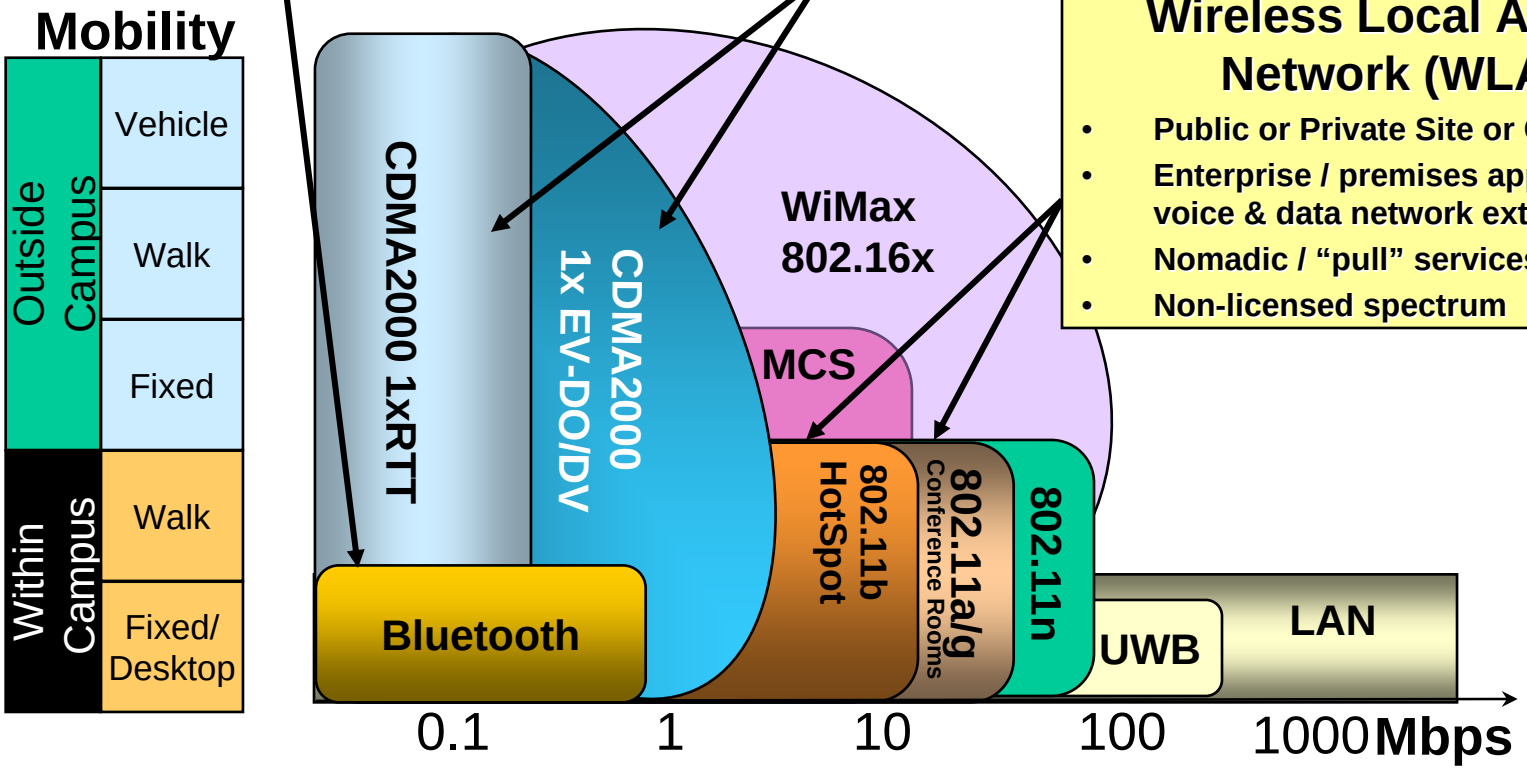
Community Discussions

Wireless Landscape

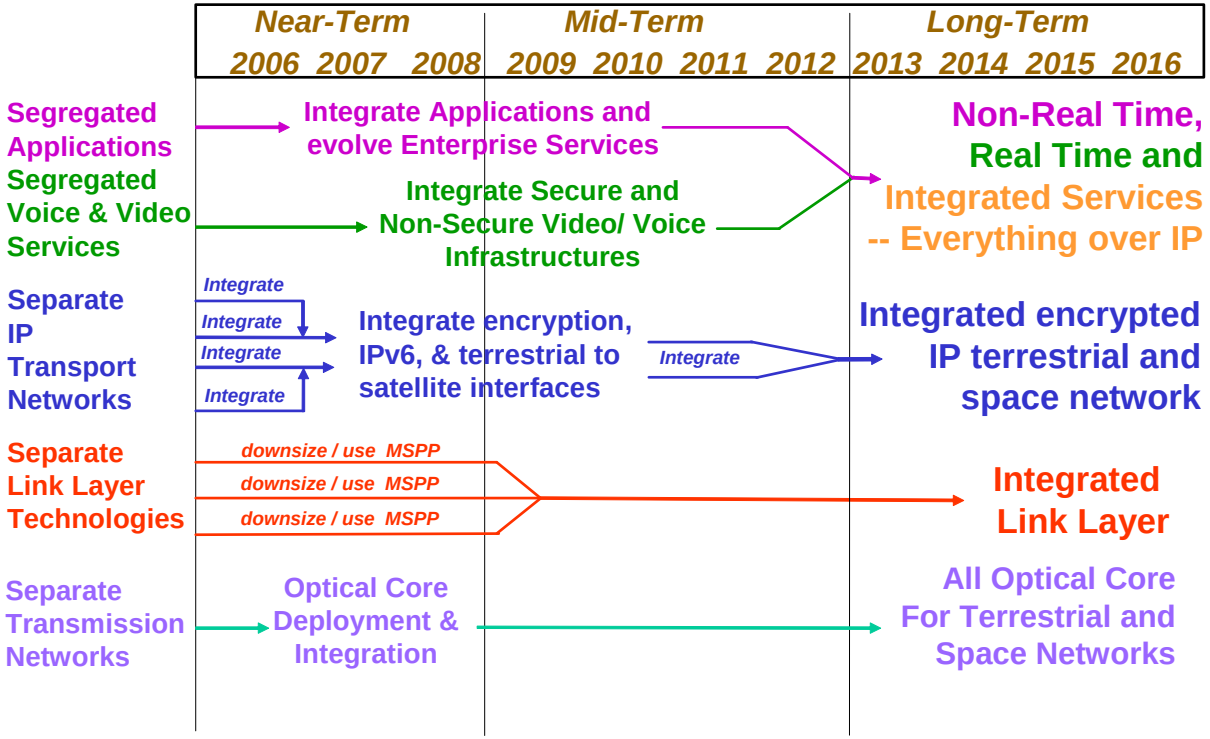
Wireless Personal Area Network (WPAN)
- Personal or location specific
- Cable replacement
- Low cost

Wireless Wide Area Network (WWAN)
- Metro/Geographical area
- "Always On" Services
- Ubiquitous public connectivity with private virtual networks

Wireless Local Area Network (WLAN)
- Public or Private Site or Campus
- Enterprise / premises application voice & data network extension
- Nomadic / "pull" services
- Non-licensed spectrum



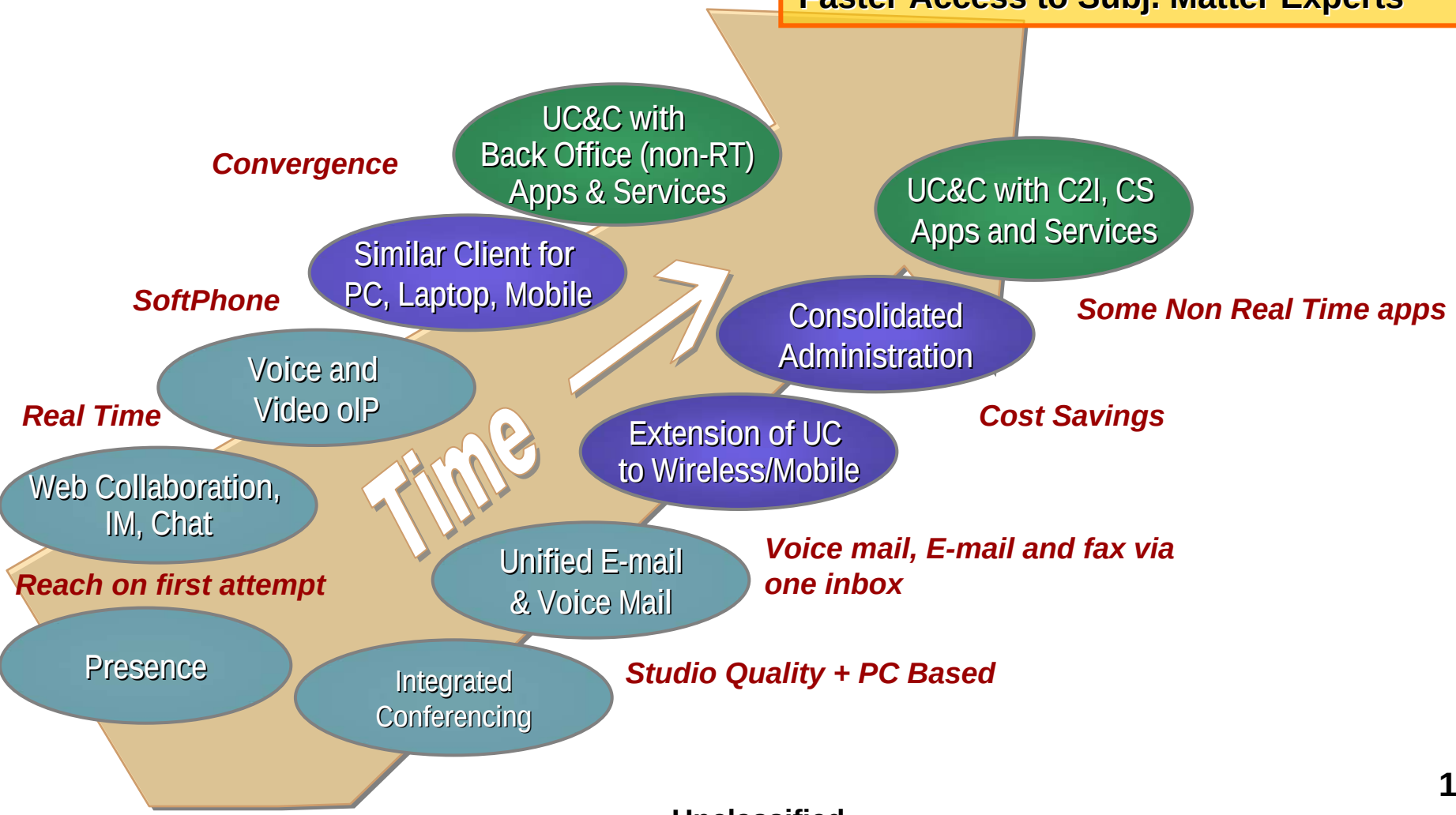
Standards Enable Convergence



IP Convergence focused on Layers 1-3. The new model is Unified Communications which includes all 7 layers of the OSI reference model.

UC&C Capability Evolution

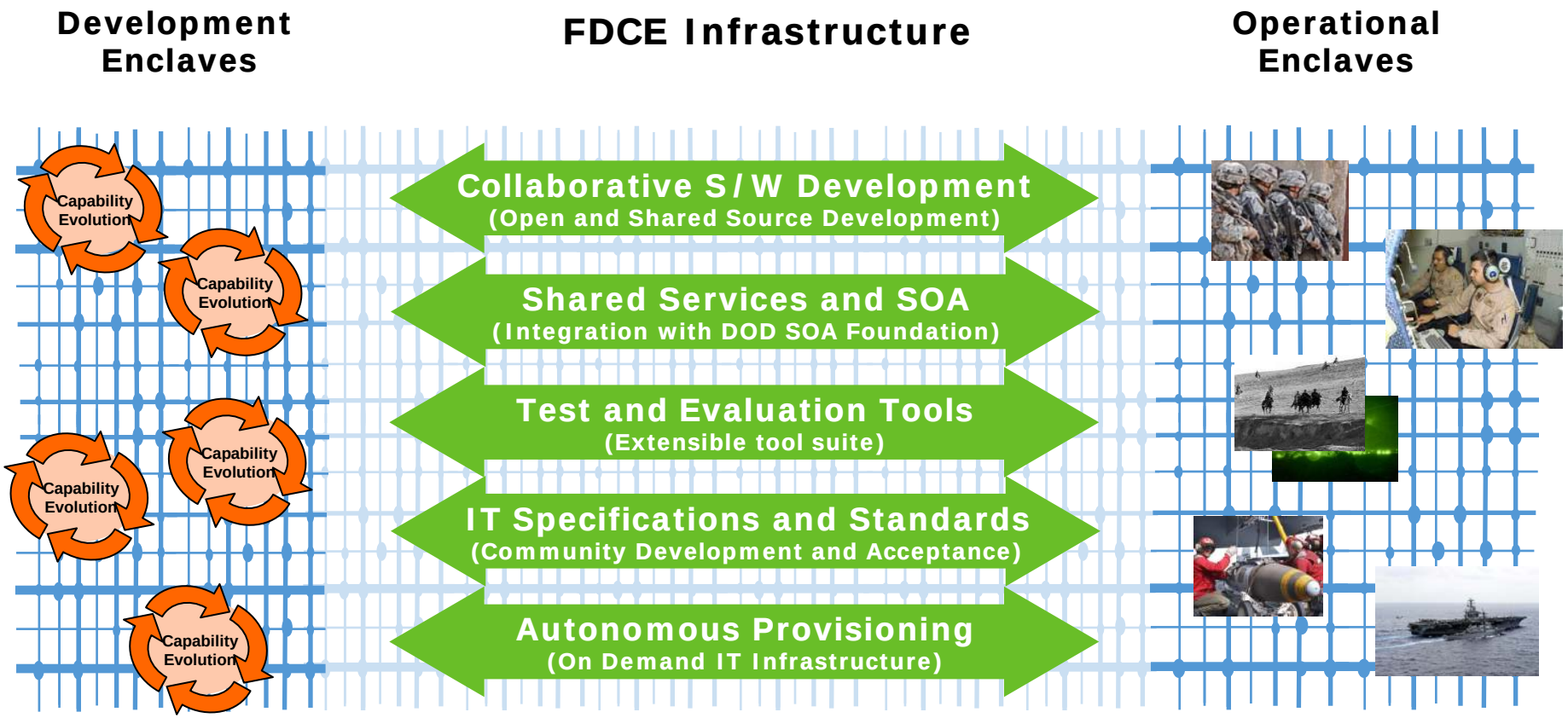
More Effective Decision Making
Improved Situational Awareness
Faster Access to Subj. Matter Experts



Innovation Engineering

- **Joint Capability Technology Demonstrations (JCTD's)/ Coalition Warrior Interoperability Demonstration (CWID)**
  - **Balance of C2, apps and Network topics**
- **Creative Research and Development Agreement (CRADA)**
  - **Just getting started in this area**
- **Liaison with DARPA**
  - **Recently established liaison officer with DARPA**
- **GIG FDCE**
  - **Build off the success of the NECC FDCE**
  - **OTA's observations of 6 June 08**

FDCE Infrastructure



Enterprise collaboration and information sharing tools tailored to support an agile development process

Summary

- **Focused technology for:**
  - **Reduce operations cost of the GIG Core segment**
  - **Management of the GIG Intermediate/Edge segments**
  - **New services via Unified Communications**
  - **Speed of deployment**
- **DISA is actively looking to industry to explore new technologies and concepts via JCTD's CRADA's and other partnerships**